# DEVICE FOR CLEANING FLOORS AND SIMILAR SURFACES

## Technical field

The present invention relates to a device for cleaning floors and similar surfaces.

## Background art

Currently, among the manual devices used to wash floors, the most widely used is the so-called scrubbing brush, which is constituted by a stick that can be gripped at one end by the user and is connected, at the other end, to a brush-like element, which is arranged at right angles to the longitudinal axis of the stick and is to be associated with a wet floor cloth.

The floor cloth must be periodically rinsed and then wrung so as to remove the collected dirt and allow to wet the floor cloth again.

This operation, by using the devices briefly described above, is usually performed by hand, with considerable inconvenience for the user, since in addition to performing an effort he/she is forced to dirty his/her hands or to wear suitable gloves.

In order to try to solve the problems noted above, floor cleaning devices have been proposed which have, at the end of the stick that is opposite to the one to be held, a floor cloth constituted by a bundle of strips of fabric, which can be wrung without being touched by engaging them with an appropriately provided perforated cup that is associated with the bucket that contains the water for cleaning.

However, although this device, usually called mop, is valid from the conceptual standpoint, it forces to use a floor cloth that has a particular shape and therefore must be provided specifically.

## Disclosure of the Invention

The aim of the present invention is to eliminate or at least drastically reduce the drawbacks noted above in known types of device for cleaning floors.

Within this aim, an object of the present invention is to provide a

device for cleaning floors that allows to wring the floor cloth without having to touch it.

Another object of the present invention is to provide a device for cleaning floors that allows to use currently commercially available floor cloths.

This aim and these and other objects that will become better apparent hereinafter are achieved by a device for cleaning floors and similar surfaces, comprising a stick connected at a substantially terminal portion, by way of kinematic connection means, to a supporting means that is associable with cleaning means, characterized in that the supporting means comprises at least two arms, which lie along respective main longitudinal directions and are mounted so that they can rotate with respect to the stick about a respective articulation axis in order to pass, upon insertion of the supporting means in a wringing basket associated with a water containment bucket, from an active or extended condition, in which the respective main longitudinal directions define a working surface, to a wringing or retracted condition, in which the respective longitudinal directions of the at least two arms are angularly spaced from the working surface, return means being further provided which are adapted to return the supporting means to the active or extended condition as a consequence of disengagement from the wringing basket.

Brief Description of the Drawings

Further characteristics and advantages of the invention will become better apparent from the description of some preferred but not exclusive embodiments of a device for cleaning floors according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a portion of a device for cleaning floors according to the present invention;

Figure 2 is a bottom elevation view of the device for supporting the

cleaning means;

Figure 3 is a partial sectional view of the supporting device, taken along the line III-III of Figure 2;

Figure 4 is a top elevation view of a bucket for containing water for cleaning floors;

Figure 5 is a perspective view of the device for cleaning floors in the condition in which it is inserted in a wringing basket associated with the water containment bucket;

Figure 6 is a perspective view of the supporting device associated with a cloth in the wringing or retracted condition;

Figure 7 is a perspective view showing an embodiment of a cloth; and

Figure 8 is a sectional view of the cloth, taken along the line VIII-VIII of Figure 7.

Ways of carrying out the Invention

In the examples of embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other examples of embodiments.

With reference to the figures, a device for cleaning floors, generally designated by the reference numeral 1, comprises a stick 2, which is connected to a supporting means 4, at a substantially terminal portion 2a, by way of the interposition of kinematic connection means 3.

The supporting means 4 provides support for, and can be associated, also by using per se known means, with cleaning means 8, such as a cloth 11, a floor cloth, a piece of fabric or the like.

According to the present invention, the supporting means 4 comprises at least two arms or flaps 5, which lie along respective main longitudinal directions. In particular, the arms 5 are advantageously extended along directions starting radially from the kinematic connection means 3, i.e., substantially at the terminal portion 2a of the stick 2.

The arms 5 are fitted so that they can rotate or oscillate with respect to the stick 2 about a respective articulation axis 100, in order to pass, as clearly shown by Figures 1 and 5, as a consequence of the user's insertion of the supporting means 4 in a wringing basket 20 associated with a water containment bucket 21, from an active or extended condition (shown in Figure 1), in which the main longitudinal directions of the arms 5 define a working surface that in practice corresponds to the surface of the floor, to a wringing or retracted condition (shown in Figure 5), in which the respective longitudinal directions of the arms 5 are angularly spaced with respect to the working surface.

Also according to the present invention, return means 6 are provided which are adapted to return the supporting means 4 to the active or extended condition as a consequence of the disengagement of said supporting means 4 from the wringing basket 20.

In greater detail, the arms 5 comprise a respective active face 7 (designed to be directed toward the floor during use), which is designed to face at least partially a portion of the cleaning means 8.

As clearly shown by the figures, in the active or extended condition the respective active faces 7 of the arms 5 lie on said working surface.

Advantageously, the wringing basket 20 is substantially cup-shaped and is provided with at least two walls 22, which form a plurality of draining openings 23 that converge toward the bottom 24 of the containment bucket 21.

Each one of the walls 22 forms a wall for the engagement of a respective portion of the cleaning means 8, which is associated with a respective active face 7. In particular, in the wringing or retracted condition, the active faces are arranged parallel to a respective wall 22.

With particular reference to the embodiment shown in the figures, the supporting means 4 comprises two arms 5, which are opposite one another with respect to the substantially terminal portion 2a of the stick 2.

At least one of the two arms 5 is fitted so that it can rotate, with respect to a fixed part 9 that is associated with the kinematic connection means 3, about an articulation axis 100, which lies substantially at right angles to the respective main longitudinal directions of the two arms 5.

The return means 6, which conveniently can be constituted by at least one spring 10, can act between said fixed part 9 and at least one of the two arms 5 or, as in the illustrated example, between the two arms 5, so as to keep (and return, after insertion within the wringing basket 20) the supporting means 4 in the active or extended condition.

Advantageously, the cleaning means 8 comprise a cloth 11, optionally made of microfiber, which has a substantially sheet-like structure.

In this regard, the active faces 7 can have means 12 for retaining the cloth 11, which are constituted for example by a plurality of pins 13 that protrude from the active faces 7 and have an enlarged head 13a. Said pins 13 are designed to penetrate at least partially the cloth 11, accordingly anchoring it stably to the supporting device 4.

In order to prevent the presence of the cloth 11 associated with the arms 5 from hindering the rotation of the arms about the articulation axis 100, the cloth 11 can conveniently have at least one continuous longitudinal portion 11a, which is arranged outside one of the longitudinal edges 5a formed during the active or extended condition by the two arms 5; in this case, moreover, the cloth 11 has a substantially transverse cut 11b, which is arranged substantially at the articulation axis 100.

With particular reference to the embodiment shown in the figures, conveniently the cloth 11 comprises two continuous longitudinal portions 11a, which are arranged outside the longitudinal edges 5a of the two arms 5.

Within the cloth 11 there is a substantially U-shaped cut, which has two parallel portions 11c, arranged at said longitudinal edges 5a of the arms 5, and there is a portion 11b for connection between the two parallel portions 11c, arranged at the articulation axis 100.

Conveniently, the kinematic connection means 3 comprise at least one articulated element 14 for connection between a cup-shaped element 15 that can be coupled to the end of the stick 2 and the fixed part 9.

According to an important object of the present invention, the containment bucket 21 can be associated with a collecting receptacle 30 which is arranged, during use, below the wringing basket 20 and is adapted to collect the (dirty) water that exits, during wringing, from the cleaning means 8 and passes through the draining openings 23.

Operation of a floor cleaning device according to the invention is evident from what has been described above.

In particular, when the arms 5 are in the active or extended condition, the faces 7 associated with the arms 5 define a working surface that ensures an optimum extension of the cleaning means 8.

If the cleaning means 8 are to be wrung, by inserting the supporting means 4 in the wringing basket 20 the arms 5 are folded and arranged on a plane that is substantially parallel to the walls 22.

In particular, the dirty water that exits from the cloth 11 during wringing is optionally collected in the collecting receptacle 30; in this manner, the water contained in the containment bucket 21 (optionally with detergent) is kept clean.

The force (and any sliding action) applied by the user to the stick 2 is transferred to the cleaning means 8, which are pressed against the walls 22, releasing the dirty water, which falls through the draining openings 23 into the collection receptacle 30.

Once this wringing procedure has been ended simply and effectively by removing the supporting means 4 from the wringing basket 20, the arms 5 are returned to the active or extended condition thanks to the action of the return means 6.

All the characteristics of the invention described above as advantageous, convenient or the like may also be omitted or be replaced

with equivalents.

The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

Thus, for example, the supporting means 4 can be associated with three or more arms 5, which protrude radially from the kinematic connection means 3 and are intended to pass from the active or extended condition to the wringing or retracted condition by means of a substantially umbrella-line closing motion.

The arms 5 might also fold in the opposite direction (i.e., by tending to close on the opposite side with respect to the stick 2); in this case, the wringing basket 20 should be optionally and conveniently provided with locking elements, which can be slidingly engaged by the cleaning means 8 supported by the arms 5 in the wringing or retracted condition.

In practice it has been observed that the invention has achieved the intended aim and objects in all of its embodiments.

In particular, the device for cleaning floors according to the invention, in addition to allowing, thanks to its adaptability, to clean even surfaces that are difficult to access, avoids the need to manually wring the conventional floor cloths that are used.

Moreover, it has been observed that the device for cleaning floors can be used in combination with floor cloths (and cleaning means in general) of various shapes, which are easily commercially available or can be made at home.

In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements and to the state of the art.

All the details may further be replaced with other technically equivalent elements.

Features which are already known may opportunely be subject of a

disclaimer.

The disclosures in Italian Patent Application no. SA2003A000019, from which this application claims priority, are incorporated herein by reference.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.